

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



REC'D. 20 OCT 2004

WES PCT

Applicant's or agent's file reference 262513-PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/ZA 03/00140	International filing date ( <i>day/month/year</i> ) 23.09.2003	Priority date ( <i>day/month/year</i> ) 30.09.2002
International Patent Classification (IPC) or both national classification and IPC C08F292/00		
Applicant BARLOWORLD PLASCON S.A. (PTY) LIMITED et al		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of 2 sheets.

- This report contains indications relating to the following items:
  - ☒ Basis of the opinion
  - ☐ Priority
  - ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - ☐ Lack of unity of invention
  - ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - ☐ Certain documents cited
  - ☐ Certain defects in the international application
  - ☐ Certain observations on the international application

Date of submission of the demand  06.04.2004	Date of completion of this report  18.10.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Wirth, M  Telephone No. +49 89 2399-8595 

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/ZA 03/00140

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

**Description, Pages**

2-13 as originally filed  
1, 1a received on 16.09.2004 with letter of 15.09.2004

**Claims, Numbers**

1-12 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	9
	No: Claims	1-8, 10-12
Inventive step (IS)	Yes: Claims	
	No: Claims	1-12
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/ZA 03/00140

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: WO-A-8101711  
D2: US-A-5972809  
D3: EP-A-0307139  
D4: EP-A-0622402

2. Novelty and inventive step (Art. 33(2) and (3) PCT).

a) D1 discloses vesiculated particles comprising a particulate solid made of TiO<sub>2</sub> and polyester and which are reacted with "diluent" monomers such as styrene or methyl methacrylate and with "modifying" monomers having at least 4 carbons (see passages cited in the search report). Diethylenetriamine is used. Claims 1-8, 10-12 are therefore not novel over D1.

In present claim 9, a very specific polyester is used. This composition is however not much different than the compositions of the polyesters used in D1 and is not considered to involve any inventive step since it has not been shown that this polyester solves any technical problem.

b) D2 discloses polymer particles comprising a solid polyester which is reacted with monomers such as methyl methacrylate, butyl acrylate, ethylene glycol dimethacrylate (see passages cited in the search report). The particles do not contain any pigment. Claims 1-8 are therefore not novel over D2.

c) D3 and D4 are considered less relevant. They illustrate the state of the art and disclose vesiculated polymer particles comprising a pigment, polyester and styrene but no "modifying monomer" having at least 4-C moieties.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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3. Clarity (Art 6 PCT)

a) It seems that the process of claim 10 was not used to prepare the particles of the examples: the modifying monomer is added in stage 1 and not at a later stage like claimed.

b) The expressions "long chain" (claim 1), "hydrophobic" (claim 2) are vague

c) The difference of nature between the "diluent monomer" and the "modifying monomer" is not clear in the claims.

**VESICULATED POLYMER PARTICLES****TECHNICAL FIELD OF THE INVENTION**

This invention relates to vesiculated polymer particles and a method of manufacture thereof, with particular relevance to their use in coating compositions.

**BACKGROUND ART**

The morphology of cross-linked multi-vesiculated polyester particles described in prior art consist of largely spherical hollow particles with multiple air voids in the dry state. These particles re-absorb water in paints and coatings, are difficult to manufacture and their particle size control is limited to processing variables such as temperature, speed of agitation and process time.

Prior art patent WO 81/01711 for the production of vesiculated beads. In this process a first emulsion (EMI) is formed in which an aqueous phase having pigment dispersed therein is emulsified in a mixture of an unsaturated polyester and a co-polymerisable monomer as a solution of the polyester in the monomer. This is a water-in-oil-emulsion. EMI is then emulsified at high shear into an aqueous phase to form a water-in-oil-in-water emulsion having the oil phase as globules of polyester/monomer each containing a number of vesicles of the initial aqueous phase. A polymerising initiator is added to initiate cross-linking of the polyester under curing conditions to form the desired vesiculated beads.

It is an object of this invention to provide cross-linked polyester particles whose morphology is largely spherical with multiple air voids that hinder the re-entry and re-absorption of water when the cross-linked particles are dry.

It is a further object of the invention to provide a conversion process of the raw materials composition which permits cross-linked particle size and distribution control through process variables such as temperature, rate of agitation and processing time as well

→ 1a

through the concentration of modifying co-monomer in the raw material composition and the optimization of the process stage for adding this co-monomer to the said composition.

It is yet a further object of this invention to provide a vesiculated polymer particle which may be used in paint and coatings formulations for the beneficial replacement of titanium dioxide pigments, expensive extenders, emulsion polymers, open time modifiers such as glycols and humectants with simultaneous achievement of improved opacity, whiteness, scrub resistance, water resistance and special faux finish effects.

AMENDED SHEET

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